

Attorney Docket No.: 133001.00101

RECEIVED
CENTRAL FAX CENTER

MAR 20 2007

REMARKS

Applicant wishes to direct the Examiner's attention to related co-pending applications U.S.S.N. 10/222,201 and U.S.S.N. 10/013,302.

Applicant wishes to thank the Examiner for the courteous interview extended to the undersigned on February 9, 2007. Currently, claims 10-15 and new claims 19-22 are pending and claims 1-9 and 16-18 have been withdrawn. Claim 10 has been amended to more particularly recite what Applicant regards as the invention. Claims 13 and 14 have been amended to correct antecedent basis. Support for amended claims 13 and 14 is found in the specification at, for example, paragraph 38. Support for new claims 19-22 may be found at, for example, original claims 7-9, paragraph 8 and paragraph 40.

Those issues raised in the interview are fully addressed in the amendments to the claims, the interview summary, and the remarks presented below. It is respectfully submitted that the present case is in condition for final allowance, and notice to such effect is respectfully requested. In the event the Examiner disagrees, entry of the proposed amendments is appropriate, as they place the case in better condition for appeal. As discussed during the interview, the claims have been amended to focus on the liquid reaction dots non-covalently deposited on a planar surface, with each reaction dot having a diameter of 10-100 microns and the reaction dots having a center to center distance of 50-500 microns. For the Examiner's convenience, independent claim 10 is reproduced below in clean format with portions in bold emphasizing some of the distinguishing elements of the present claims.

10. (Currently amended) An assay system, comprising:

a computer and a set of operating instructions resident in computer software of the computer for operating:

a set of reactant dot applicator pins;

an xy positioner operatively connected to the reactant dot applicator pins,

wherein said reactant dot applicator pins create a microarray of liquid hydrophilic reaction dots on a planar surface, each of said reactant dots adhering to said

Attorney Docket No.: 133001.00101

planar surface in a **non-covalent manner** and having a **diameter** ranging from 10 microns to 100 microns and being separated by a **center to center distance** of 50 microns to 500 microns, and having one or more constituents therein; and

a separate device for biological sample aerosol mist generation, wherein the aerosolized biological sample mist droplets are applied simultaneously to said microarray by said separate device for sample aerosol mist generation, **without forming a wetting film**, for computer-enhanced assay of any reaction between the sample mist droplets and said constituents.

In addition, Applicant re-submits herewith a Declaration Under 37 C.F.R. 1.132 of Scott L. Diamond, previously submitted on August 23, 2006. In particular, the presently submitted Declaration corrects the inadvertent typographical errors found in paragraphs 5, 6, 12, and 13 reciting "mm" (millimeters) instead of correctly reciting "microns." To avoid confusion, the claims have been amended to clearly recite "microns" when reciting the droplet diameter and center to center distance between the droplets.

35 U.S.C. § 112, first paragraph

The claims stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. As discussed during the interview, written description, for example, can be found in original claim 10. As was agreed during the interview, this rejection should be withdrawn, and notice to such effect is respectfully requested.

35 U.S.C. § 112, second paragraph

The claims stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. As the Examiner expressed concern over the language directed to the computer controlling the chamber and this element is non-essential for purposes of the present claims, this element has been removed from the claims, and the rejection should be withdrawn.

35 U.S.C. § 103(a)

The claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Henderson et al, 6,573,369 in view of Eipel et al. 6,737,024 and further in view of Engle et al.,

Attorney Docket No.: 133001.00101

6,521,325. Previously presented claims 10-14 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Henderson et al, 6,573,369 in view of Tisone et al. 5,738,728 and further in view of Engle et al., 6,521,325. Finally, previously presented claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Henderson et al, 6,573,369 in view of Tisone, 5,738,728 and further in view of French et al., 5,345,079.

While respectfully disagreeing with the Examiner's position on the previously presented claims, Applicant has amended the claims to overcome these rejections. Applicant has included elements directed to liquid reaction dots non-covalently applied to a planar surface with each dot having a diameter of 10 to 100 microns and being separated by a center to center distance of 50 to 500 microns. Even more specifically, Applicant has specified in the dependent claims the carrier (e.g., glycerol, see claim 19) and the reaction components (e.g., enzyme reaction components, see claim 20; biological materials, see claim 21; substrates, see claim 22). It is respectfully asserted that none of the cited prior art, nor any other art of which Applicant is aware, anticipates or makes obvious the presently claimed invention. The Examiner's primary reference, Henderson, fails to teach or suggest, for example, a liquid reaction dot with the recited center to center distance of 50 to 500 microns. Also, Henderson is hardly analogous art. Henderson fails to suggest using an aerosol mist to apply a second reactant without contamination.

The Examiner's secondary references do little more than demonstrate the novelty and non-obviousness of the present invention. The art-recognized approach when using a liquid reaction dot microarray is through the use of a well, a zone, or a covalent attachment. Without this, and indeed even with it under many conditions, cross contamination would likely occur. Eipel, for example, requires a hydrophobic ring or "zone" to prevent measurement zones from spreading into one another. See Eipel at col. 3, lines 17-20. Eipel requires a 400 micron hydrophobic zone. See Eipel at col. 6, line 33. Accordingly, following the teachings of Eipel, two reaction dots of even 10 microns in diameter would have a center to center distance of over 800 microns. Thus, Eipel does not teach or suggest liquid reaction dots having a diameter of 10 to 100 microns and being separated by a center to center distance of 50 to 500 microns.

Attorney Docket No.: 133001.00101

Likewise, Tisone fails to teach or suggest the claimed invention. Tisone discusses an aerosol dispensing system for coating a diagnostic test strip. One of ordinary skill in the art would not be motivated to combine the aerosol dispensing system of Tisone with Henderson and/or Engle or French because Tisone is not concerned with applying aerosol to a microarray of liquid hydrophilic reaction dots. Rather, Tisone relates to an aerosol for application of reagents to a clinical test strip. As such, it is not concerned with testing an array of samples while preventing cross contamination across the array.

Applicant has discovered a way to provide a computer-assisted assay of liquid reaction dots at high density while depositing in a mist aerosol a second reactant. It is respectfully submitted that a *prima facie* case of obviousness cannot be established, and furthermore, even if a *prima facie* case has been established, it is rebutted by the Declaration of Scott L. Diamond previously submitted on August 23, 2006 (and corrected by the Declaration of Scott L. Diamond submitted herewith). Applicant respectfully reminds the Examiner of her burden to consider the enclosed Declaration, as indicated in MPEP 716.01.

Attorney Docket No.: 133001.00101

RECEIVED
CENTRAL FAX CENTER

MAR 20 2007

CONCLUSION

In light of the amendments and remarks above, it is believed that pending claims 10-15 and 19-22 are in condition for final allowance and notice to such effect is respectfully requested. The Commissioner is hereby authorized to charge any fees that may be due, or credit any overpayment in connection with this response to Deposit Account No. 50-0436. Should the Examiner have any questions regarding this application, the Examiner is invited to initiate a telephone conference with the undersigned.

Respectfully submitted,

By:



Raymond A. Miller
Reg. No. 42,891

Dated: March 20, 2007
PEPPER HAMILTON LLP
500 Grant Street
One Mellon Bank Center, 50th Floor
Pittsburgh, PA 15219
(412) 454-5813
(412) 281-0717 - facsimile